	Application No.	Applicant(s)
Notice of Allowability	10/698,623	SMITH ET AL.
	Examiner	Art Unit
	Siu M. Lee	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *amendment filed on 6/29/2007*.

2. ☒ The allowed claim(s) is/are *1-3 and 5-31*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☐ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments, see page 13-14, filed 6/29/2007, with respect to rejection

of claims 1-3 and 5-6 have been fully considered and are persuasive. The rejection of

claims1-3 and 5-6 has been withdrawn.

2.   Applicant's arguments, see page 12-13, filed 6-29/2007, with respect to objection

to claims 4, 5-12 and 21-23 have been fully considered and are persuasive. The

objection of claims 4, 5-12 and 21-23 has been withdrawn.

Allowable Subject Matter

3.   Claims 1-3 and 5-31 are allowed.

4.   The following is an examiner's statement of reasons for allowance:

(1) Regarding claim 1

The present invention describes a data recovery circuit comprising a clock

generator for generating a first group of sampling clock pulses and a second group of

sampling clock pulses for sampling an incoming data stream, each sampling edge of

said first group of sampling clock pulses and each sampling edge of said second group

of sampling clock pulses being arranged alternatively and being separated from each

other for an interval equal to half the period of said incoming data stream, said clock

generator being controlled in response to a phase control signal to adjust phases of said

first group of sampling clock pulses and said second group of sampling clock pulses, a

data and phase sampling circuit for receiving said incoming data stream, said first group of sampling clock pulses and said second group of sampling clock pulses, said data and phase sampling circuit taking samples of said incoming data stream in accordance with said first group of sampling clock pulses to produce a first sampled data stream while taking samples of said incoming data stream in accordance with said second group of sampling clock pulses to produce a second sampled data stream wherein said first group of sampling clock pulses includes a first clock signal and said second group of sampling clock pulses includes a second clock signal, said first clock signal and said second clock signal are 90 degrees out pf phase with each other, and both rising edges and falling edges of said first clock signal and said second clock signal are used as said sampling edges and a phase detection and correction circuit coupled to said data and phase sampling circuit, for determining resemblances of each bit in said second sampled data stream to the corresponding two bits in said first sampled data stream, the associated sampling edge of said bit in said second sampled data stream being adjacent to the associated sampling edges of said two bits in said first sampled data stream, said phase detection and correction circuit producing said phase control signal on the basis of the resemblance determination result. The closest prior art, Jeong (US 5,547,756) and Johansen et al. (US 6,538,475 B1) discloses a similar system but fails to disclose said first group of sampling clock pulses includes a first clock signal and said second group of sampling clock pulses includes a second clock signal, said first clock signal and said second clock signal are 90 degrees out pf phase with each other, and

both rising edges and falling edges of said first clock signal and said second clock

signal are used as said sampling edges, thus rendering claims 1-3 and 5-12 allowable.

(2) Regarding claims 13, 16, 17, 28, and 29:

The present invention describes a phase detection circuit for detecting phase

conditions of a first group of sampling clock pulses and a second group of sampling

clock pulses in a data recovery circuit, said first group of sampling clock pulses being

used for sampling approximately a central portion of each data bit in an incoming data

stream to produce a first sampled data stream while said second group of sampling

clock pulses being used for sampling approximately a transition portion between every

two data bits in said incoming data stream to produce a second sampled data stream,

said phase detection circuit comprising: an early/late determination circuit for receiving

said first sampled data stream and said second sampled data stream, comprising: a

resemblance detection circuit including a plurality of resemblance detecting units, each

of said plurality of resemblance detecting units being used for detecting whether one of

a plurality of bits in said second sampled data stream is equal to the former or the latter

of the corresponding two bits in said first sampled data stream and producing one of a

plurality of resemblance signals; and an early/late decision circuit for receiving said

plurality of resemblance signals corresponding to said plurality of bits, comparing the

number of times that one bit is equal to the former of the corresponding two bits with the

number of times that one bit is equal to the latter of the corresponding two bits, and

selectively producing an early signal or a late signal. The closest prior art, Jeong (US

5,547,756) and Johansen et al. (US 6,538,475 B1) discloses a similar system but fails

to disclose a resemblance detection circuit including a plurality of resemblance

detecting units, each of said plurality of resemblance detecting units being used for

detecting whether one of a plurality of bits in said second sampled data stream is equal

to the former or the latter of the corresponding two bits in said first sampled data stream

and producing one of a plurality of resemblance signals; and an early/late decision

circuit for receiving said plurality of resemblance signals corresponding to said plurality

of bits, comparing the number of times that one bit is equal to the former of the

corresponding two bits with the number of times that one bit is equal to the latter of the

corresponding two bits, and selectively producing an early signal or a late signal.

Similar features have been added to independent claims 13, 16, 17, 28, and 29, thus

rendering claims 13-31 allowable.

Any comments considered necessary by applicant must be submitted no later

than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Siu M. Lee whose telephone number is (571) 270-1083.

The examiner can normally be reached on Mon-Fri, 7:30-4:00 with every other Friday

off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Siu M Lee
Examiner
Art Unit 2611
8/30/2007

CHIEH M. FAN
SUPERVISORY PATENT EXAMINER